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GEOGRAPHIC SCHOOL BULLETINS

Published Weekly by

THE NATIONAL GEOGRAPHIC SOCIETY

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March 25, 1946. Vol. XXIV. No. 24.

1. Finland Begins Its Return Journey to Peacetime Prosperity
2. Port Arthur and Dairen To Be Far East Doors for Soviet Trade
3. Newfoundland's Sealing Fleet Sails Again
4. The Aurora Borealis Drops Some of Its Mystery
5. Resorts Dot Aosta and Roya, Alpine Valleys Claimed by France

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UMI

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HOW TEACHERS MAY OBTAIN THE BULLETINS

The Geographic School Bulletins are published weekly throughout the school year (thirty issues) and will be mailed to teachers in the United States and its possessions for one year upon receipt of 25 cents (stamps or money order); in Canada, 50 cents. Originally entered as second-class matter January 27, 1922; re-entered as of April 27, 1943, Post Office, Washington, D. C., under Act of March 3, 1879. Copyright, 1946, by National Geographic Society, Washington 6, D. C. International copyright secured. All rights reserved. Quedan reservados todos los derechos.

Finland Begins Its Return Journey to Peacetime Prosperity

THE recent resignation of President Mannerheim of Finland removes a link in the chain that tied the Baltic republic to Germany during the war.

A Montana-sized chunk of territory sliced off the tsarist empire during the Russian Revolution, Finland began its independent modern history with a civil war of its own. It was proclaimed a sovereign state in 1917 and emerged from its domestic turmoil as a republic in 1919.

Finns Live Close to the Water

About 350,000 of Finland's 3,860,000 inhabitants are of Swedish origin, although, contrary to a prevalent impression, the Finns are not Scandinavians. Ethnologists believe that they came from Mongolia early in the Christian era, and that they are akin to the Estonians and the Hungarians.

Life everywhere in Finland is close to water (illustration, next page). More than half of the republic's western border is washed by the Gulf of Bothnia. On the south the Gulf of Finland separates it from Estonia. Thousands of lakes, gouged out by glaciers in their southward push, lie like mirrors on the land. Canals link the lakes with each other and with the Gulf of Finland, making a network of waterways navigable for 3,000 miles, and "floatable" for 29,000 miles. Timber rafts by the thousands nose through the shallows toward sawmills on deep water.

Finland's rivers are many and swift. Their rapids supply power for paper and pulp mills, and other industries.

Although the majority of Finns are farmers, cultivated land totals less than a tenth of the national domain. Rye, oats, barley, potatoes, and hay are the chief crops. Cattle are raised extensively, and dairy products are one of the nation's most important exports.

With woods and water their birthright, Finnish farmers turn naturally to fishing and forestry. Good boatmen abound far inland.

"Water, Water Everywhere" Tempers Finland's Climate

Nearly three-quarters of the land is forested. Stands of pine, spruce, and birch are abundant. The chief products of the forests, which supply about four-fifths of Finland's exports, are wood pulp, cellulose, paper, plywood, matches, skis, and airplane propellers. The Finns know the value of their timber, and have made certain of its conservation by limiting cutting to the quantity that can be replaced by one year's growth.

Despite its northern latitude—Finland is in line with Alaska and southern Greenland—Finland's climate is moderate. Coastal waters temper extremes. Winter, with an average temperature of 25 degrees Fahrenheit, lasts about four months in the south. The seven-month winter of the northern part of the country has an average temperature of 12 degrees. Summer averages are 65 and 53 degrees, respectively.

Prewar Finland's more than 4,000 factories employed 207,500 workers. Notable in the nation's development is the rise of the cooperative system. In 1939 more than 7,000 cooperatives were active. Membership exceeded 900,000. Cooperatives did about 25 per cent of the retail trade, and about 40 per cent of the wholesale business.

All but 160 miles of Finland's 3,600 miles of railways are state owned, as are the 24,000 miles of telegraph lines, and most of the 118,000 miles of telephone

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THE JAPANESE, USING RUSSIAN PLANS, BUILT MODERN DOCKS AT DAIREN, A MANCHURIAN PORT CONTROLLED BY OUTSIDERS SINCE 1898; PRESENT AGREEMENTS MAKE THE CHINESE CITY A FREE PORT UNDER JOINT SOVIET MANAGEMENT (Bulletin No. 2)

GEOGRAPHIC SCHOOL BULLETIN

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Port Arthur and Dairen To Be Far East Doors for Soviet Trade

THE U.S.S.R.-China agreement giving Russia a share in the control of Port Arthur (Ryojun) and Dairen makes these cities two of the most important ports of northeast Asia. They will become free import-export channels for the Soviet Union's trade. Port Arthur, a harbor city of 142,000, is Pacific Asia's northernmost ice-free port. Before the outbreak of the Second World War, Dairen's population was about 445,000.

Dairen was first developed by the Russians under a concession granted by China in 1898. It was designed to give Russia a southern water gate for her railway lines in Manchuria, also built with China's permission. Construction was centered at the site of the Chinese village of Talien. The Russians called the port Dalny, and opened it to world commerce in 1901. The Russo-Japanese War transferred the city to Japan, which named it Dairen.

Japanese Built by Russian Plan

Dairen lies on the eastern coast of Kwantung near the end of Manchuria's Liaotung Peninsula. The growth of the city has carried it up the gentle slopes of a range of hills south of its bay. Port Arthur lies 22 miles to the southwest, almost at the very tip of the peninsula. The former, according to international agreements, is to become a free port for world commerce, the latter a Chinese-Russian naval base.

At Dairen, Russia planned a tailor-made town with extensive harbor facilities, and laid the groundwork before the war with Japan in 1904. When the South Manchuria Railway Company became a Japanese enterprise, after the war, it took over the development and followed Russian blueprints in its building operations.

Two distinct towns—a European and a Chinese—separated by a park area, were features of Dairen's city plan. Broad streets in a regular pattern were projected to all sections. Trees were planted on both sides of the streets, and walks were paved. Russian and European influence on architecture was apparent in the older structures, but a city-bred American would have felt at home among the newer office and residential buildings and the modernistic railway station (illustration, next page).

Dairen port facilities include two breakwaters, the newer one protecting a water area of 2,500 acres. More than two miles of piers and docks line the harbor. Steamers ranging up to 25,000 tons can be berthed along Dairen's waterfront. Floating cranes and shore hoists can handle cargoes from ship to lighter and from ship to shore. Most of the wharves are linked to the railway system (illustration, inside cover). Though near ice-free Port Arthur, Dairen's harbor requires ice-breakers during part of the winter.

Port Arthur Named for English Prince

Soviet use of these Manchurian twin ports will give the Trans-Siberian Railway (by way of the Manchurian line) a year-round outlet. Vladivostok, the Trans-Siberian terminal in the U.S.S.R. itself, is clogged with ice from early in January. The continuous use of ice-breakers is necessary practically throughout the winter.

A shifting prize of war for a hundred years, Port Arthur served as the Anglo-French base in the war against China begun in 1857. The British then christened

UMI

lines. Before the war, airways linked Finland with Estonia and Sweden.

The key road in the highway grid crisscrossing the country is the motor route linking Petsamo (northern port given to Russia by the terms of the 1944 armistice and renamed Pechenga) with the south. A day's peacetime traffic count totaled 2,500 buses, trucks, and passenger cars. Winter temperatures pave this road with a tough upper crust that stands up to the pounding of truck traffic. Because of the Gulf Stream, Petsamo is ice free and can be used even when Baltic ports much farther south are frozen shut.

Finland needs to import for her industries coal, coke, chemicals, iron and steel, machinery, cotton and woolen goods. To fill out the national menu, imports must include meat, fruit, coffee, tea, spices, grain, flour, and sugar.

Educationally Finland ranks very high. The population is 99.1 per cent literate. The English and Russian languages are now taught in the nation's schools, where before the war German was the chief foreign language in the curriculum.

Largest of Finland's cities is the capital, Helsinki, with its 305,000 residents. Next is Tampere, 76,700; Turku, 74,300; and the ancient capital, Viipuri (Viborg), 74,250, which goes to Russia with the Karelian area ceded by the armistice terms.

Note: Finland is shown on the National Geographic Society's Map of Europe and the Near East. A price list of maps may be obtained from the Society's headquarters, Washington 6, D. C.

For additional information, see "Flashes from Finland" (19 illustrations), in the *National Geographic Magazine* for February, 1940*; and "The Farthest-North Republic," October, 1938*; and the the GEOGRAPHIC SCHOOL BULLETINS, November 20, 1944, "Finland, Land of Farms in the Forest." (*Issues marked with an asterisk are included in a special list of Magazines available to teachers in packets of ten for $1.00.*)

Bulletin No. 1, March 25, 1946

Gustav Heurlin

OLAF'S CASTLE AWAITS INVASION BY A PEACEFUL LANDING PARTY

A boatload of school children is about to besiege Olaf's Castle, now a museum, but the object of many less peaceful sieges during the centuries since the Swedes built it in 1475. The fortress, perhaps the finest in northern Europe, stands on a small island in the Kyrönsalmi Strait, on the north-south route through Finland's lake-canal network of waterways. A resort community has grown up around the castle, which is now of more commercial than military importance.

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Newfoundland's Sealing Fleet Sails Again

NEWFOUNDLAND'S sealing industry, just entering its 1946 season, shares postwar difficulties with many other occupations. Scarcity of ships is a serious detriment to a business that in its heyday (the mid 1800's) operated 400 vessels, employed 13,000 men, and brought in 700,000 pelts. Before the war the sealing fleet had shrunk to eight ships manned by about 1,500 hunters.

Two factors which contribute to the decline of sealing are the shortness of the season—March 14 to May 1—and the present difficulty of replacing ships.

Newfoundland Seals Do Not Become Coats

Of the several varieties of seals that frequent the ice pans off Newfoundland, the only ones important in commerce are hooded seals and harp seals. The hooded seal is distinguished by leopardlike markings and loose folds of flesh draped around its head in the form of a hood. The harp seal is identified by a grayish patch on its back thought to resemble an ancient harp. It is also called a saddleback from the likeness of this pattern to a saddle.

The fur of the Newfoundland (hair) seals is not suitable for coats—no process has been discovered for making it remain fast to the hide. "Sealskin" coats are not made from the seals hunted off Newfoundland, but from the fur seal which lives in the north Pacific and is taken in the Pribilof Islands. These animals are not actually seals, but sea lions, akin to bears.

The hoods and harps are valuable for the oil which is processed from the layers of fat under the skin. The skins are used for pocketbooks, belts, wallets, and other articles needing a fine-grained leather.

According to sealers, killing their prey has a twofold advantage. In addition to their obvious uses, their absence is a boon to the cod fisheries. It has been estimated that seals frequenting the Grand Banks (about 50 miles southeast of Newfoundland) eat three million pounds of cod a day.

The sealing season begins while mother seals are still caring for their young seals, on the ice, where they are born. Now that airplanes are available for locating the herds on the ice pans, much time is saved. In the old days, sealing ships often had to dynamite their way through ice and sometimes searched a month before finding a "main patch," or center of the herd.

The Kill Is Only the Beginning of the Work

A woodsman—fisherman, hunter, lumberman—makes an ideal sealer, especially if he is a lightweight, quick and sure of foot, alert, and has great endurance. It takes speed to catch his clumsy looking but extremely fleet prey. The actual heat of the chase is sometimes enough to keep him warm when, in order to work up enough speed to overtake the seals, he strips to his underwear and boots.

The seal hunter is only beginning his job when he kills the seal. He must then skin, or "sculp" it, and haul the pelts over the ice to markers—usually a red flag on a pole—which guide the sealing ship to the piles of skins. Delivering 120 pelts to the marker is considered a good day's work.

The hunter's chief tool is a seven-foot club, or "bat," of some strong wood like ash. Into a groove at the end is slipped the gaff, a combination hook and spike. He can knock the seal on the head with the club and the hook is useful for hauling the seal, or a man, out of the water. His equipment also includes a

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the city "Port Arthur" in honor of Prince Arthur, the late Duke of Connaught. To the Japs the port was known as Ryojun; the Chinese called it Lushun.

The city of Port Arthur spreads to the north and east of a large lagoon and its bottleneck entrance, which together form a series of harbors. China's "Old Town" to the east is separated from the Russian "New Town" by a large hill. From the top of the hill rises the 250-foot tower the Japanese erected to the memory of their soldiers who fell in the siege of Port Arthur in 1904. New Town was laid out on modern lines by the Russians. The old Chinese section has been somewhat modernized by the Japanese, who built a hospital, war museum, naval depot, governor's palace, law courts, and other government buildings.

China had made Port Arthur the arsenal of its navy by 1894, only to lose it that year to Japan as a result of the Sino-Japanese War. Following advice from Russia, Germany, and France, Japan returned the city and adjoining territory to China.

Note: Dairen and Port Arthur are shown on the Society's Map of Asia and Adjacent Areas.

For further information, see "New Road to Asia," in the *National Geographic Magazine* for December, 1944*; and "Japan Faces Russia in Manchuria," November, 1942*.

See also, in the GEOGRAPHIC SCHOOL BULLETINS, March 11, 1946, "Manchurian Railways Return to Joint Russia-China Control;" and "Japan-Soviet Far East Border Is Long, Varied, and Explosive," April 30, 1945.

Bulletin No. 2, March 25, 1946

W. T. Turner

EASTERN AND WESTERN TRANSPORT LINES UP AT DAIREN'S RAILWAY STATION

Transformed from fishing village to busy seaport in the past half-century, Dairen's streets show examples of customs of the two countries which have taken a hand in its development—Japan and the U.S.S.R. The droshky, horsedrawn, four-wheeled carriage, is of Russian origin. The smaller, man-pulled ricksha shows the Japanese influence. The coolie, balancing baskets on a shoulder pole (right) typifies the Oriental use of man as a beast of burden.

The Society wishes to thank the many teachers who have written letters commending the Geographic School Bulletins. Such comments are always appreciated though we have not been able to answer each note personally.

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The Aurora Borealis Drops Some of Its Mystery

(In response to the many requests from teachers for copies of this bulletin, which has been long out of print, we are glad to reprint it, slightly revised.)

WHAT is the aurora borealis, the display of icy-white beams and fluttering colors that spreads over the heavens and mystifies millions of Americans?

Auroras, or northern lights as they frequently are called, went unexplained by science until relatively recent times. Thousands of persons still believe them to be the reflection of sunlight from polar snows. Even now physicists do not think that they know the complete story. But developments in several sciences have helped toward a solution.

Information from Other Fields Helped

Among those developments are a better understanding of gases, the building of better telescopes and photographic equipment that have brought new information about the sun, an increased knowledge of electricity and earth magnetism, and even the spread of radio. A theory has emerged which is now pretty generally held by scientists. The theory, briefly, is this:

Sun spots, which in reality are "whirlwinds" in the sun's white-hot gases, develop from time to time. From the craters that these rapidly spinning storms form, tiny particles are hurled outward.

The craters are carried along by the rotation of the sun on its axis as mountains are carried by the earth. On a smaller scale, the turning of the sun spots through space can be compared to the change in aiming the great guns on a battleship, as the turret in which they are fixed turns.

Electrified Particles Bombard the Earth

As the sun rotates, a sun spot's crater may come to point toward the earth. If at that time it "shoots" a bundle or stream of electrified particles with sufficient force to reach the earth's atmosphere, the particles, it is believed, cause auroras.

Before the invisible particles arrive, our planet is spinning away on its usual routine, half bathed in sunlight, half in the shadow of night. Surrounding the earth, and rotating with it, is the vast ocean of atmosphere, or air. The air is relatively "thick" near the earth's surface, but away from the solid earth it rapidly grows thinner. At a point five or six hundred miles or more up, near the "edge" of the atmosphere, it is so thin that it approaches a vacuum.

There is something else invisible that surrounds the earth and plays a part in the drama of auroras. It is the earth's "magnetic field," the forces that make the compass needle point approximately toward the north and south. It reaches out even farther than the air.

Ordinary sunlight, traveling 186,000 miles a second, makes the 93-million-mile trip from the sun to the earth in about 8 minutes. But the electrified particles that are believed to cause auroras move much more slowly. According to weight, they have speeds of about 400 to 1,400 miles per second, and require from 18 to 60 hours to reach the earth's atmosphere.

When they arrive, they cause a tremendous disturbance in the usually well-ordered upper air. They change the normal magnetic field of the earth, moving compass needles from their usual channels. They disrupt the higher "radio ceilings" so that short waves are not turned back earthward to receiving sets.

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skinning knife and a sharpening steel, about 25 feet of rope, a compass, watch, water can, and a "nunny bag" in which he carries enough food for the day. Dark goggles are necessary to prevent ice blindness. Steel spikes in the soles of the hunter's boots keep him from slipping on the ice.

Men and ships face great hazards on sealing voyages. The men are sometimes lost in fogs and blizzards; they may go blind from ice glare or fall into the water. Broken ice pressed up ("rafted") may crush a ship. Icebergs may wreck it.

Sealing crews (illustration, below) work on a percentage basis. Usually they receive an advance based on the expected size of the catch. One-third of the net earnings of the voyage was an established figure for the crew. The captain got about four per cent. The remainder went to the shipowners. Crew shares have averaged from $60 to $240, though ships have returned without a pelt after a cruise of two months.

The money from sealing is regarded by the men as a sort of stopgap income. In summer they work in the island's iron, coal, and copper mines, or fish for cod. Most of them own their houses and keep a cow and a sheep or two.

Note: The hunting grounds of the Newfoundland sealing fleet may be located on the Society's Map of the Atlantic Ocean.

See also "The Sealing Saga of Newfoundland," in the *National Geographic Magazine* for July, 1929.

Bulletin No. 3, March 25, 1946

Holloway

WINTER WORK, NOT WINTER SPORTS, IS THEIR OBJECTIVE

Over the ship's side and out across the treacherous white field of ice the sealers trek, in a curiously symmetrical zigzag pattern, their "bats" held like alpenstocks or ski poles. But they are bent on business, not sports. Furled flags carried by some of the men will be placed at intervals to indicate where the hunters are to deposit the skins, or "sculps," after they have collected as many as they can drag over the rough ice.

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Resorts Dot Aosta and Roya, Alpine Valleys Claimed by France

FRANCE'S claims to territory beyond its borders in Italy, include a portion of the Valley of Aosta and sections of the Roya Valley to the south.

The Valley of Aosta is a scenic corner of northwestern Italy lying in the shadow of the loftiest Alps, directly across the border from France and Switzerland. This valley extends along the southern approaches to Mont Blanc, the 15,781-foot "monarch of mountains;" Great St. Bernard, famed for its hospice and rescue dogs; and the rugged Matterhorn.

Medieval Castles and Roman Ruins Enhance the Scenery

From small towns, orchards, vineyards, and grain fields along the Dora Baltea River are visible the snow-piled peaks, glaciers, forests, and waterfalls which provide some of Europe's most magnificent scenery. In normal times the region was crowded with visitors who came for mountain climbing, skiing, and other winter sports, and the thermal springs of the valley health resorts.

Against the backdrop of natural grandeur rise turreted castles built by feudal lords in the 14th and 15th centuries. Some of these impressive structures were destroyed during the recent war, but others are remarkably well preserved, and a few are still inhabited.

There are remains, too, of an earlier period of the valley's history—the days of the Roman Empire. Roman troops guarding the Alpine approaches built roads and bridges, portions of which still exist.

The town of Aosta, now the capital of Aosta Province, was laid out by Augustus Caesar about 24 B.C. As Augusta Praetoria, the town was of great military importance, as the remains of fortifications and roads indicate. Before the war Aosta had a population of nearly 26,000 people It is still known as "the Rome of the Alps," although renowned as much for its medieval churches and cloisters as for its Roman relics.

The Valley of Aosta has been for centuries an important communication route between France and Italy. Its people (illustration, next page) speak a French dialect, and in dress and customs have much in common with French communities across the border which France now wishes changed. After the Allied invasion of Italy in 1943, many Aostans emulated the French maquis by organizing underground resistance forces to harass German and Italian troops quartered in the valley.

The Roya's Many Names All Signify Its Torrential Course

South of Aosta, French claims for territorial adjustments are centered principally in the valley of the Roya. This boisterous stream cascades its way southward some 30 miles from its Italian mountain source between the Maritime and the Ligurian Alps to enter the Ligurian Sea arm of the Mediterranean at the Italian Riviera border town of Ventimiglia.

Known in various localities along its course by almost a dozen names—variants of Roya, meaning it is a roaring torrent—the river plunges through a succession of steep ravines where old castled towns cling precariously.

Often before, the Roya has held a spot on the stage of Europe's drama. Noble families of Tenda and Ventimiglia, the towns at its source and mouth respectively, originally held it. In 1250, the middle third was gained by the Counts of Provence. In 1860, this ten-mile sector was signed over to France as part of

UMI

The particles themselves, while still above the atmosphere, are pulled by the earth's magnetism toward the north and south magnetic poles. When they finally strike into the gases of the air they are over the northern and southern parts of the earth. There are countless collisions of the sun-born particles with molecules of the air gases. As a result the gas molecules are "agitated" or set to vibrating so that they glow, showing forth the beautiful lights of the aurora, probably from 40 to several hundred miles above the earth. Very roughly, this can be compared to what takes place in the tube of a neon or fluorescent light when an electric current passes through.

This general theory gained support from the spectacular auroral display of mid-September, 1941. An unusually large group of spots was photographed on the sun, day after day, for nearly a week before the appearance of the aurora. The spot area was turning steadily toward the earth. Some of the largest of the spots crossed the sun's meridian—almost exactly faced the earth—on the morning of the 17th. About 18 hours later, on the morning of the 18th, the greatest change in the earth's magnetism was recorded. Thirty hours after the spots crossed the meridian and for several hours afterward, the sky was lighted by the great aurora.

Since 1938 the National Geographic Society and Cornell University have been cooperating in a painstaking study of auroras, observing them by means of spectrographs, recording the varying forms by photography, and taking other pictures at the same instant from the ends of a 200-mile base-line. These photographs will be used to calculate the exact heights above earth of auroral gases, and to check magnetic and radio records for facts about auroras still unknown.

Note: For further information, see "The Solar System's Eternal Show," in the *National Geographic Magazine* for July, 1939*; and "The Mystery of Auroras," May, 1939.

Bulletin No. 4, March 25, 1946

Theodore Tadda

A CLOUDLIKE AURORAL DISPLAY FILLS THE NIGHT SKY

This brilliant aurora consisting of both white and colored light was photographed at Cranberry Portage, Manitoba, Canada, September 9, 1943, between 10:30 and 10:45 p.m. Such displays are believed to occur when molecules of air gases are thrown into vibration as a result of the bombardment of the earth's atmosphere by electrified particles from the sun.

the Sardinian Duchy of Savoy. Thus in modern times, the strategic value of the valley as a military route has been denied to both France and Italy.

Tenda, in the Italian upper third of the valley—one of the sections which France now seeks to annex—is a town of 3,000. During the Fascist regime Tenda became the heart of an Italian mountain resort region. A few miles north, the railway from Nice to Cuneo tunnels and spirals its way across 6,000-foot Mt. Tenda to Liemone Piemonte, Italy's equivalent of Idaho's Sun Valley. From Tenda travelers also climbed the Freddo Valley northwestward to reach the summit of Mt. Margueris, 8,700 feet, highest of the Ligurian Alps; or sallied down the Roya to visit Briga (La Brigue) and San Dalmazzo di Tenda in Italy, and Saorge (Saorgio) and Breil (Breglio) in France.

Three miles south of Breil, the Italian lower third of the Roya Valley begins. The chunk of Italy to its west—another of the sections now sought by France—is very small. Mulberry trees and hydroelectric plants create Roya industries.

Note: Italian border regions claimed by France may be located on the Society's Map of Central Europe and the Mediterranean.

See also "Hunting Castles in Italy," in the *National Geographic Magazine* for September, 1935*.

Bulletin No. 5, March 25, 1946

Donald McLeish

WITH THE "WINGSPREAD" OF HIS EARS, THIS DONKEY MIGHT ALMOST FLY

Cobbled streets in Aosta echo to the creaking of wooden cartwheels as a farm family jogs to town. The balconied building and the crucifix are of a type also found across the border in near-by France, where costumes, speech, and ways are very similar.

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